



PETRONAS PENAPISAN TERENGGANU (81909-X)

A Wholly-owned subsidiary of PETRONAS  
24300 KERTIH, KEMAMAN, TERENGGANU. TEL : 09-8271244 CABLE : PENAPIS KEMAMAN TELEX : PETREF MA 51326 TELEFAX : 09-8271634.

1<sup>st</sup> February 2010

Radeka Teknik Sdn Bhd  
31A, Jalan Anggerik Vanilla N31/N  
Kota Kemuning  
40460 Shah Alam  
Selangor Darul Ehsan

Attention : Encik Anuar bin Ismail  
Director

Dear Encik Anuar

**ELECTROFLOW™ POWER QUALITY IMPROVEMENT SYSTEM**

Thank you for the successful installation, commissioning and operation of the two ElectroFlow™-units installed in May 2008 at our Substation 22, 415V Switchgear- 22 PMC53L & R.

I would like to express my satisfaction at your team's professionalism and performance of the two units as monitored both at the 415V side in May 2008 and at the 3.3KV side on Wednesday October 14<sup>th</sup> 2009.

From these installations, it is confirmed that we have achieved average 20.43% of KWH energy saving compared to the expected which is only 11.82%, as verified by our engineering team (Attachment A).

I wish you success in this endeavor, and would like to request you to conduct evaluations and develop a viable proposal for installations at other low and medium voltage systems in the rest of our Kertih manufacturing facilities.

Thank you.

Yours faithfully  
for PETRONAS PENAPISAN (TERENGGANU) SDN BHD

A handwritten signature in black ink, appearing to read "Jamil Bin Hashim".

**JAMIL BIN HASHIM**  
General Manager (Plant)

Attachment

**POWER QUALITY EFFECTS – PMC53L (Measured at 3.3KV)**

Parameter	Before ElectroFlow			After ElectroFlow		
	Phase A	Phase B	Phase C	Phase A	Phase B	Phase C
Voltage (v)	3,243.00	3,256.00	3,216.00	3,388.00	3,389.00	3,388.00
Current (A)	129.00	129.00	129.00	100.00	100.00	100.00
Power Factor	0.78	0.78	0.77	0.99	1.00	1.00
Vthd (%)	1.20	1.40	1.30	0.30	0.40	0.20
Ithb(%)	23.00	26.00	27.00	1.17	1.75	1.57

**RESULTANTS OF THE SPA (Statistical Path Analysis) VERIFICATION - PMC453L**

	Projected		Actual	
	Value	%	Value	%
Annual KWD	213	3.06	468	6.72
Annual KWD (USD)	1000	3.27	2197	7.19
Annual KWH	209075	12.28	324480	19.06
Annual KWH (USD)	7772	12.27	12062	19.05
Total (USD)	8772	9.34	14259	15.19

**POWER QUALITY EFFECTS – PMC53R (Measured at 3.3KV)**

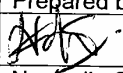
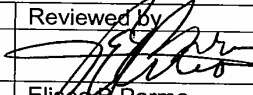
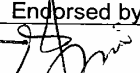
Parameter	Before ElectroFlow			After ElectroFlow		
	Phase A	Phase B	Phase C	Phase A	Phase B	Phase C
Voltage (v)	3,235.00	3,259.00	3,253.00	3,387.00	3,389.00	3,388.00
Current (A)	129.00	129.00	129.00	100.00	100.00	100.00
Power Factor	0.78	0.78	0.77	0.99	1.00	1.00
Vthd (%)	1.20	1.40	1.30	0.30	0.40	0.20
Ithb(%)	23.00	26.00	27.00	1.17	1.75	1.57

**RESULTANTS OF THE SPA (Statistical Path Analysis) VERIFICATION - PMC53R**

	Projected		Actual	
	Value	%	Value	%
Annual KWD	226	8.19	265	9.6
Annual KWD (USD)	1089	7.56	1277	8.87
Annual KWH	95730	11.36	183622	21.79
Annual KWH (USD)	3921	12.44	7521	23.85
Total (USD)	5106	11.12	8798	19.16

**TOTAL ENERGY SAVINGS FROM PMC53R & 3L**

	Projected		Actual	
	Value	%	Value	%
Annual KWH (PMC53L)	209075	12.28	324480	19.06
Annual KWH (PMC53R)	95730	11.36	183622	21.79
Average Annual KWH	304805	11.82	508102	<b>20.43</b>

Prepared by 	Reviewed by 	Endorsed by 
Norradia Salmee Salehuddin Electrical Executive, PP(T)SB	Elicio B. Parma Electrical Specialist, PP(T)SB	M Asri b Kamaruddin E&I Manager